The CHEMIST

JANUARY, 1937 VOLUME XIV, NO. 1

AMERICAN INSTITUTE OF CHEMISTS

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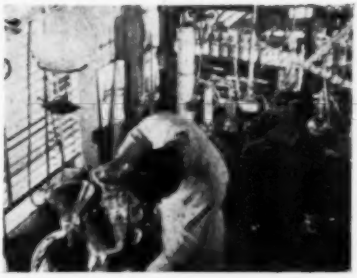

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The CHEMIST

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V. F. KIMBALL, *Editor*, 233 Broadway, New York City

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THE AMERICAN INSTITUTE OF CHEMISTS
HOWARD S. NEIMAN, *Secretary*
233 Broadway
New York, N. Y.

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Objectives
of the
AMERICAN INSTITUTE of CHEMISTS

To give chemists professional solidarity.

To put the profession back of a definite code of ethics.

To insist on adequate training and experience qualifications.

To educate the public to an understanding of what a chemist is.

To protect the public and the profession by fighting quackery.

To raise the economic status of chemists.

HOWARD S. NEIMAN, *Secretary*
The American Institute of Chemists
233 Broadway, New York, N. Y.

Please send me an application blank for membership in the American Institute of Chemists.

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Position .....

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City ..... State .....

The American Institute of Chemists Today

"Now the New Year reviving old desires,
The thoughtful soul to solitude retires."
—Omar Khayyam

WE MAY retire to solitude, fittingly at this New Year, to meditate briefly upon the past deeds and the future of THE AMERICAN INSTITUTE OF CHEMISTS.

The white pages of the 1937 manuscript lie opened before us. The ink, prepared from past accomplishments, unfinished work, and new objectives, awaits the recorder. The close-patterned pages of previous years inspire us to a greater future, as our attention selects a line from this page or a fragment from that.

Here recorded as of a year ago is our membership of 744. Today, that membership is 1098. Diligent work by our efficient and faithful Membership Committee in collaboration with our devoted Secretary brought the objectives of our society to the attention of chemists of highest professional caliber, who willingly added to our endeavors their influence and prestige.

A standard curriculum of chemical education has been prepared by our Committee on Professional Education, which recognizes not only the requirements of the profession of chemistry, but also those subjects which give the individual chemist the means of living a full, informed life as a citizen. Many educational institutions have written for copies of this curriculum or adapted their programs to fit its recommendations.

A Code of Ethics for chemists has been given to the profession.

Chemists unrecognized professionally, as were those of the Brooklyn Navy Yard and of New York City, have been reclassified as a result of our work in their behalf.

Each year a medal is awarded "for noteworthy and outstanding service to the science of chemistry or the profession of chemist in America."

High scholastic attainment and qualities of professional leadership are encouraged by our local Chapters' awards of students medals to selected colleges.

Contracts between chemists and employers have been considered and a tentative form drawn up subject to further study.

The registration of properly qualified chemists through a State license law, operating as do the regulations governing the registration of physicians, lawyers, and engineers, has been undertaken. Our President

is personally working to accomplish this objective, and we are encouraged by his favorable progress.

THE CHEMIST, as the official journal of THE AMERICAN INSTITUTE OF CHEMISTS, publishes articles pertaining to the professional interests of chemists. Its material is constantly reprinted by other publications, and in addition to the INSTITUTE membership, it has a voluntary subscription list of those who desire information about the profession.

Though sketchily glancing at our record of past events, we cannot but notice the splendid influence of our local Chapters in their respective communities. These chapters, the New York, the Niagara, the Pennsylvania, and the Washington, hold regular meetings with stimulating speakers and worthwhile programs. They are doing much to bring to the chemists of their districts a consciousness of the need for professional organization.

Members of the INSTITUTE, through public addresses, radio talks, and the writing of professional articles, are also doing much to inform the public of the important work of the INSTITUTE.

Professional solidarity, which we have worked so earnestly to achieve since the INSTITUTE's founding, is becoming a nearer goal. The sincere, self-sacrificing endeavors of our officers and councilors and the patient, uncomplaining work they have contributed to this ideal brightly illuminate our pages.

THE AMERICAN INSTITUTE OF CHEMISTS is particularly concerned with the problems of seeing that the training for the profession is adequate, and that only those who are qualified to practice the profession of chemistry are considered as chemists. To this end, its membership requirements are high, requiring not only an adequate basic training but also the character and experience that will enhance the prestige and distinction of the profession. Sufficient publicity must be given in 1937 to the INSTITUTE's objectives so that all qualified chemists will join together to achieve solidarity of action. Only solidarity of action will accomplish the raising of the economic status of chemists and dignify the profession to its rightful position.

Even today, with a comparatively limited membership, Fellowship in THE AMERICAN INSTITUTE OF CHEMISTS implies competence for testimony in courts of law and acknowledged professional standing.

This brief glance at some of the activities of the AMERICAN INSTITUTE OF CHEMISTS must inspire us to make 1937's record show even greater achievements. Every qualified chemist is invited to join with us to work for the good of the profession of chemistry in America.

—V. F. K.

Chemistry and Human Welfare

by **M. L. Crossley, F.A.I.C.**

Through this radio talk given by Dr. Crossley, the public gained a deeper appreciation of the contributions of the chemist to human progress.

THE CONTRIBUTIONS of chemistry to the advancement of our civilization are evident on every hand. The combined powers of chemistry and technology have forged out of the common substances of the earth materials and things that are essential to human welfare. The laboratory curiosities and scientific theories of one day become the means of supplying luxuries and necessities the next. Today, the electron is trapped, and tomorrow it is harnessed to the plough of industry. But a few years ago atoms and electrons were the figments of scientific minds; their gambolling parties amused only the theorist. Now, flames of atomic hydrogen are used daily in welding metals in the several industries. The performance of electrons is familiar to all, aiding the radio to bring to mankind world-wide expressions of human thoughts, feelings and activities. The heart of the atom is pierced by the scientist who dares to push beyond the frontiers of the known and as a result, common substances like table salt are made to give off energy radiations which can be put to use in the service of humanity in hospitals for the relief of suffering and in minimizing the hazards of life. Two-thirds of the common elements can now be made radio-active by bombardment with neutrons.

The romance of chemistry is a thrilling epic. The chemist has created pròducts that have no counterpart in Nature and technology has applied these products in industry. As a result life is fuller and more worthwhile for all. Chemistry renovates old industries and creates new ones. The new is had at the expense of abolishing the old. This is the price to be paid for progress. The chemist has also unravelled many of Nature's secrets and matched wits with her in synthesizing products previously wholly within her province. Dyes, drugs, perfumes, synthetic fibers, resins and other valuable auxiliaries to life and human betterment have been created and applied in industry. The

delicate fragrance of the flowers, the beauty of an autumnal pageantry of colors, the potent power of drugs to abate the ills of humanity and regulate body activities and individual behavior can be had today without drawing on Nature's supplies. In fact, many of the most important things now available for the comfort and needs of man are not found in Nature's storehouses. They have resulted from the trinity of imagination, knowledge and skill of the chemist. They are creations called for by modern social and economic conditions. They represent the pillars on which the superstructure of industrial progress rests.

Witness the beautifying devices and wardrobe of the modern girl! From shoes to lipstick and rouge is a continuous story of thrilling adventure, requiring courage, self-sacrifice and perseverance on the part of many chemists to overcome obstacles, face disaster and disappointments in the exploration of the unknown in the realms of chemistry, that ultimately fundamental truths would be discovered and applied in furthering human betterment and expanding the fullness of life to embrace the many instead of the few. The modern girl is a human billboard displaying the wares of chemistry. The proverbial figleaf has become a spruce chip. The delicate fabrics in her wardrobe are descendants of the spruce tree which waved its proud branches over the creatures of the forest but a short time ago. The beautiful pageantry of colors in her ensemble claim as ancestors the common aristocracy of the earth—coal, water, air, and minerals. The delicate fragrance that reflects her charming personality is, too, synthetic. Perfumes that are not available from Nature's storehouses, are produced for her out of substances that are unrelated in properties and usefulness. She may select her perfume to match the color of her dresses and gowns—the fragrance of the rose for a pink morning provocative frock; lilac for a purple velvet suit; orange blossoms to bring out the fullness of her beauty in orange smock, and lily of the valley to lend to her attractive grace in white satin gown or trailing arbutus for sapphire blue to emphasize her regal power over the male members of her admirers. Her jewelry may have been derived from the two common germ chasers, carbolic acid and formaldehyde — substances without structural form and capacity, but when united by the persuasive forces of chemistry and technology, produce a hybrid, capable of giving a variety of products of beauty and utility. The guiding hand of chemistry is seen in the unfolding panorama of the many things that contribute to human welfare. In the delicate hues of color displaying the wares of business in the pages of advertising employed to inform society

of what is available; in the inks that record thoughts and actions; in the cigarette holder perched between slender fingers tipped by scarlet nails, in the silent automobile gears that deliver power to the modern car; in tires and upholstery that lend to the beauty and usefulness of the machines of transportation; and in the remedial agents that help mankind to find satisfactory adjustments in the complexities of the environment; in the foods that furnish nourishment and repair for the body and determine the overtones of the disposition of the individual reflecting personality; in these and many other indispensable things, chemistry plays an important part.

THE EVOLUTION of the automobile is a record of chemical and technological achievements. It has evolved from lowly chemical ancestors. Its beautiful upholstery may be traced back to the trunks of forest trees, the invisible gases of the atmosphere, the brimstone and coal from the bowels of the earth and water from distant rivers and lakes. The metal parts on which its strength and power depend are created by chemists out of the useless clays and ores taken from the crust of the earth. To release these materials from bondage in natural products, it is necessary to bring to bear the combined persuasive forces of mathematics, physics, chemistry, technology and engineering, to trap electricity and compel it to open the prison doors of the molecules of clays and minerals. These metals are harnessed to new teams, in alloys, for service. The tires which enable the automobile to give comfortable service are compounded by the sciences of chemistry and physics, aided by the art of technology and engineering, chiefly from the sap of the rubber tree in far distant forests, the downy covering of cotton seed and the soot released by fire from bondage in the hydrocarbon family, the entire mixture being stiffened to meet the frictional demands of the road by the tonic qualities of brimstone and the chastening influence of chemicals derived from coal-tar. The flexibility and efficiency of the engine are tangible records of accomplishment in chemistry and metallurgy. The silent gears are mute testimonials to the strength of the alliance between the products of the union of two common household liquid servants—carbolic acid and formalin—with cotton duck. The finish and upholstery are reminders of great achievements in chemistry of carbon compounds. Fascinating romances among chemical families of prominence have given birth to these members of the chemical family. One of the most important is the romance which leads to the

creation of the essential film-forming substances in the finish on the car. Air is forced to part with its nitrogen by the chilly influence of Neptune's balmy brine and persuasive power. Thus the molecules of the gases of the air are crowded into close quarters. This they resent and get hot trying to resist the restraining conditions. It becomes necessary to cool them down. While under the influence of Neptune's spell they are induced to crowd closer. When they recover from the deception they endeavor, by furious assaults on the walls of their prison, to escape, but, finding it impossible to get free, they get hotter then ever and must be restrained by the cooling graces of liquid ammonia. Then they are suddenly released and, like school children let out for recess, they expend so much of their energy in romping about that they get cold and wilt to liquid. The individual gases have different capacities for recuperating and depart alone. Each is trapped; the nitrogen being forced into union with hydrogen, by means of an appropriate catalyst, to form ammonia. This is then the parent of nitric acid from which other unions of profit to society can be obtained. Among these is the nitrocellulose of commerce. All of these contribute to make the automobile an instrument essential under modern conditions in the many necessities that go to establish human welfare on a plane which assures future advancement in the march of civilization.

ONE OF chemistry's chief missions is to discover means for safeguarding health and enhancing the value of life. Chemistry is more concerned with keeping human beings well than with making gold. It is dedicated to the important task of unravelling the story of life's processes and of helping to guide man to a fuller realization of his possibilities as a biochemical chip off the human family block.

In man himself, chemistry plays an important rôle. Atoms and molecules influence his thoughts and actions. In every breath he draws, in every thought he thinks, in every word he speaks, in every act he performs, chemistry is his guide, servant, and friend. Chemical reactions are at the basis of his existence. When all is well in his molecular organization, he is happy, free from pain, healthy in body and soul. When molecular disturbances and disharmonies occur somewhere in his systemic organization, he is sick and miserable in body and often in mind—unsocial in disposition.

Chemistry has also contributed to man's welfare by emancipating medicine from the dungeons of the supernatural and endowing it with

new powers of service to humanity. Pain is no longer the grim monster it was. Synthetic drugs permit the surgeon to explore almost every corner and nook of the human body, making adjustments when needed. Anesthetics render the patient unaware of the ordeal, and antiseptics minimize the hazards of infection and death.

Products having no counterpart in Nature have been created by the chemist and put to use in the attempt to relieve suffering and prevent disease. A great variety of substances have been fashioned out of the common elements and assigned to duty in the army of drugs for the annihilation of pain and the corrective needs of the human system. With the common things of Nature available as raw materials, the wheels of the chemist's brain turn in one direction and produce knowledge essential to creating the architecture of the molecular structures of the colors of the rainbow, in another those of the potent drugs, in still others, the synthetic fibers and perfumes.

We are privileged to have available all these things. What we do with them is entirely a matter of our capacity to see their potential usefulness and our willingness to apply the knowledge unselfishly and inspiringly for the greater good of society.

Substances that guide man's destiny, that make him normal or abnormal, are produced by chemical means. The chemical changes that take place in the human body are purposeful and occur on time, in definite amounts and definite rates. They perform definite tasks. Their production must stop promptly when they have accomplished their purpose. The balance of chemical activity in the system is essential to health and well-being as well as to individual accomplishments. In the chemical activities of the cells reside the power to make us pigmies or giants, cowards or brave men, lovers or haters, thieves or honest men, male or female. To gain access to the treasure vaults of knowledge concerning the chemical activities of the human body is an important function of chemistry. The remedial drugs on every drugstore shelf bear testimony to the work of chemistry in the service of mankind. Drugs for many purposes are now available. All play an important part—the drugs that allay fever, abate pain and diminish suffering as well as those in the surgeon's syringe ever ready to perform the miracle of snatching man from the embrace of death.

Before any of the results of applied chemistry could be available, fundamental research had to be done in varied fields of chemical endeavor. Back of all that has been accomplished in chemistry is a record of struggle to overcome ignorance, superstition, and doubt. To

appreciate the good things of life, we must see them in their true aspects. Back of an important discovery in chemistry is likely to be a stink pot and a tarry smear. The achievements in applied chemistry are monuments to the struggle of theoretical chemistry to bring them about. This is generally true of human endeavor. The brilliant feats in surgery and medicine had their beginning in tainted cats and cadavers. The achievements in medicine had their prelude in human suffering and untimely death. The great masterpieces of music are but the reverberations of human heart throbs in agonizing struggle. There is a Gethsemane on the road to every victory.

Of Professional Interest

LAST month Drs. Perrin H. Long and Eleanor A. Bliss of Johns Hopkins told the Southern Medical Association of their success with prontosil and prontylin in treating dangerous streptococcus infections that destroy red blood-cells. They were merely clinical verifiers of a discovery made by Professor G. Domagk, a chemo-therapist in the employ of the Interessengemeinschaft. Skeptical German and English clinicians carried Domagk's tests from the mouse to the human stage. Now comes Dr. George Loring Tobey, Jr., of Boston with the news that the President's son has been happily saved from a dangerous streptococcus infection of the throat by the timely administration of prontylin. In the light of the clinical record it is fair to herald Domagk's discovery as the outstanding therapeutic achievement of the last decade. The old ineffective preparations of mercury and silver now give way to derivatives of coal-tar dyes.

Without detracting in the least from the brilliant work of Professor Domagk, we have here another triumph of industrial research — a triumph of cooperation. From Professor Heinrich Hoerlein, director of pharmaceutical research for the Interessengemeinschaft, came the original suggestion that the coal-tar derivatives, known as azo dyes, might have a selective lethal effect on streptococci. His disciple, Professor G. Domagk, followed the clue. Hoerlein turned the task of carrying out Domagk's molecular design of a compound that looked promising on paper to Drs. Mietzch and Klarer, skillful chemists, likewise in the employ of the Interessengemeinschaft. After years of patient experimenting on deliberately infected mice, Domagk was able to announce his initial success in 1935.

The lesson that Domagk and his associates teach is one that the

medical profession and the public should take to heart. Again we are presented with the spectacle of a group of men following a well-conceived plan of research under competent direction. So it happens that the probable conquest of streptococci and a dozen deadly afflictions to which they give rise must be credited, not to trained physicians, but to a group of chemists in the employ of a commercial company.

—Reprinted with permission from The New York Times.

The Committee on Professional Advancement of the Association of Consulting Chemists and Chemical Engineers, New York, N. Y., advocates the encouragement by the Government of private chemical consultants and laboratories as a measure of national defense. "If preparedness for a national emergency is to be effective, the Government ought to be in a position to command the best scientific services which its citizens and its industries can render. To be in such a position, it is desirable that the Government shall cultivate to some reasonable degree all the scientific and engineering agencies of the country so that in time of emergency these may be expanded to meet the needs of the moment. It is particularly important to encourage private consultants and laboratories, since their services can be expanded with the least upset to industry."

John Edwin Dowd

It is with deep regret that THE AMERICAN INSTITUTE OF CHEMISTS records the death of one of its Fellows, John Edwin Dowd, formerly director of the Department of Sanitation of the Pease Laboratories, Inc., New York, N. Y.

Mr. Dowd was born in New Britain, Connecticut, in 1880. After receiving the A.B. degree from Dartmouth College, he obtained the A.M. degree from Columbia.

He also studied at Cooper Union, and taught for three years at Pratt Institute. He specialized in the chemical and bacteriological examination of water and sewage and the interpretation of results, and almost throughout his career he was employed in this field. He has been a member of THE AMERICAN INSTITUTE OF CHEMISTS since 1930.

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CHAPTER REPRESENTATIVES

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November Meeting

The one hundred and thirty-sixth meeting of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS was held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on November 19, 1936, at six o'clock P. M.

President Maximilian Toch presided. The following officers and councilors were present: Messrs. B. H. Knight, H. S. Neiman, W. T. Read, C. W. Rivise, A. Rogers, N. A. Shepard, and M. Toch. Mr. M. R. Bhagwat, Secretary of the Chemists' Unemployment Committee, was present. Miss V. F. Kimball was also present.

The minutes of the preceding meeting were approved.

The Treasurer's report, showing cash on hand of $266.32, was accepted and ordered filed.

Dr. Toch presented a file of correspondence sent to him by Dr. Wightman of the American Medical Association, and upon motion made and seconded, the matter was referred to the American Chemical Society.

Dr. Toch reported that he would take up the matter of a commemorative stamp with Secretary of the Treasury Morganthau in the near future.

Dr. Toch also reported that he would contact Governor Lehman, upon the Governor's return from California, with reference to the licensing of chemists.

The Secretary reported on the present standing of INSTITUTE members and stated that, without counting the members to be elected at this meeting, the total INSTITUTE membership is now 1064.

The Secretary read a sheaf of invitations from Washington, D. C., invit-

ing the INSTITUTE to hold its next annual meeting there. Upon motion made and seconded, the selection of a meeting place was postponed until a later date.

A report was read from Mr. Frederick Kenney, Chairman of a Committee appointed at the September meeting of the Council to make recommendations regarding the reclassification of chemists in the Municipal Service.

The future of the Chemists' Unemployment Committee was discussed.

Upon motion made and seconded, the following new members were elected:

FELLOWS

ROY B. ANDERSON, *Secretary*, Brooklyn Varnish Manufacturing Company, 35 Nostrand Avenue, Brooklyn, N. Y.

SIDNEY BORN, Director of Petroleum Research, University of Tulsa, Tulsa, Oklahoma.

EVERITT J. COLE, *Treasurer*, Manufacturers' Varnish Company, Inc., 74 Lorraine Street, Brooklyn, N. Y.

PRESTON M. DUNNING, *Superintendent and Chief Chemist*, Colonial Works, Inc., 231 Norman Avenue, Brooklyn, N. Y.

ADOLF C. ELM, *Research Chemist*, The New Jersey Zinc Company (of Pennsylvania), Palmerton, Penna.

RALPH H. EVERETT, *Secretary*, Keystone Varnish Company, 71 Otsego Street, Brooklyn, N. Y.

CLIFFORD S. LEONARD, *Research Biochemist*, White Laboratories, Inc., 113 North 13th Street, Newark, N. J.

WALTER A. MCKIM, *Technical Adviser to Sales*, Pittsburgh Plate Glass Company, 2 Chester Avenue, Newark, N. J.

GORDON H. MUTERSBAUGH, *Superintendent of Factory and Laboratory*, The Glidden Company, 11001 Madison Avenue, Cleveland, Ohio.

HAROLD C. PARKS, *Laboratory Chief*, Devoe-Raynolds Co., Inc., 34 Oliver Street, Newark, N. J.

HENRY F. PAYNE, *Chief Chemist*, John L. Armitage and Company, 245 Thomas Street, Newark, N. J.

FRANK SELDEN, *President and Technical Director*, The Upco Company, 4805 Lexington Avenue, Cleveland, Ohio.

WALTER T. L. TEN BROECK, *Research Chemist*, Goodyear Rubber Plantations Company, Dolok Merangir, East Coast Sumatra, Netherlands East Indies.

JOHNSTONE E. WEELANDS, *Research Engineer*, Bakelite Corporation, 230 Grove Street, Bloomfield, N. J.

ASSOCIATE

KENNETH J. HOWE, *Vice-president*, The Thibaut and Walker Company, 5-48 - 46th Road, Long Island City, New York.

There being no further business, adjournment was taken.

CHAPTERS

Niagara

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1439 Kenmore Avenue
Kenmore, New York

News Reporter to THE CHEMIST, William A. Smith

Council Representative, Arthur W. Burwell

New York

Chairman, Raymond E. Kirk *Vice-chairman,* D. D. Berolzheimer
Secretary-treasurer, James W. H. Randall
52 East 41st Street
New York, N. Y.
Council Representative, Lloyd Van Doren

The New York Chapter met at The Chemists' Club, New York, N. Y., on December eighteenth, following an informal dinner. The speaker was Mr. John R. Parsons, consultant in air analysis, purification and conditioning, who spoke on "The Chemist in Air Conditioning". More than fifty members were present, and a number of them contributed to a most interesting discussion of the subject.

Pennsylvania

Chairman, Joseph W. E. Harrisson *Vice-chairman,* Lewis D. Newitt
Secretary-treasurer, Avenir Proskouriakoff
67 Fairview Avenue
Lansdowne, Penna.
Council Representative, Charles W. Rivise

Washington

Honorary President, Charles E. Munroe *President,* Louis N. Markwood
Vice-President, Norris W. Matthews *Treasurer,* James B. Martin
Secretary, Ralph B. Deemer
213 Maple Avenue, Takoma Park, Maryland.
News Reporter to THE CHEMIST, James F. Couch
Council Representative, Louis N. Markwood

The November meeting of the Washington Chapter was held jointly with the Washington Chemical Society, local section of the American Chemical Society, on the twenty-fourth, in the auditorium of the Cosmos Club. The meeting was addressed by the President of THE AMERICAN INSTITUTE OF CHEMISTS, Dr. Maximilian Toch, who spoke on the "Scientific Authentication of Works of Art". The genial speaker delighted his audience, which filled all available space in the large auditorium, with his urbanity and quiet humor. Among those who discussed the address was Dr. Leo Baekeland, who humorously referred to Dr. Toch's penchant for critically examining the *objets d'art* of his friends. The meeting was presided over by Dr. J. H. Hibben, F.A.I.C., president of the Washington Chemical Society, and L. N. Markwood, F.A.I.C., president of the Washington Chapter of THE AMERICAN INSTITUTE OF CHEMISTS. About two hundred and fifty persons attended.

The October meeting of the Washington Chapter was held after a

luncheon served at noon, October twenty-ninth, in one of the dining rooms connected with the cafeteria at the Department of Agriculture. The speaker was Dr. W. W. Stockberger, chemist and director of personnel of the Department, who spoke on problems concerning scientific men and employment. Dr. Stockberger has devoted fifteen years to a careful study of this subject and his discussion of it was eagerly listened to by the members of the Chapter. Twenty-five members and guests attended.

OUR NEW MEMBERS

MARION EPPLEY, F.A.I.C., was graduated from Princeton University with the Ph.D. degree. Specializing in general and physical chemistry, electrochemistry, and analytical chemistry, he is the author or co-author of fourteen technical papers. He is president and owner of The Eppley Laboratories, Inc., Newport, R. I.

RALPH L. EVANS, F.A.I.C., received the B.S. degree from the University of Chicago, and the Ph.D. degree from Columbia University. He specializes in cosmetics, a field in which he has had fifteen years' of manufacturing and comprehensive experience. He is also the patentee of many processes or products in this field. He is technical director of Marinello Corporation and affiliated companies, New York, N. Y.

K. GEORGE FALK, F.A.I.C., has studied at Columbia University, Johns Hopkins University, and the University of Strassburg from which he holds the Ph.D. degree. He is an authority on biochemistry and is director of the Laboratory of Industrial Hygiene, Inc., 337 East 25th Street, New York, N. Y., and also biological chemist of the Bureau of Laboratories, Department of Health, New York, N. Y.

MORRIS S. FINE, F.A.I.C., received the Ph.D. degree from Yale University. Specializing in the utilization of vegetable proteins; metabolism in pellagra, creatin, creatinin, uric acid metabolism, and nutrition, he is director of the Research Department of General Foods Corporation, Battle Creek, Michigan.

AUGUSTUS H. FISKE, F.A.I.C., obtained the Ph.D. degree from Harvard University. Specializing in organic chemistry; halogen and nitrogen derivatives of benzol; orthoquinones; acidic value of phosphates and baking powder ingredients, he holds a number of patents, and has written several articles and papers on these subjects. He is chief chemist, assistant secretary, and a member of the Board of Directors of the Rumford Chemical Works, Rumford, R. I.

CYRUS H. FISKE, F.A.I.C., has the A.B. degree from the University of Minnesota and the M.D. degree from Harvard University. Preferring the field of biological chemistry, he has contributed a number of papers on that subject to the technical journals. He has been at Harvard University Medi-

cal School, Boston, Massachusetts, since 1918 as professor of biological chemistry.

FRED F. FLANDERS, F.A.I.C., received the A.M. degree from the State College of Washington and the Ph.D. degree from Harvard University. He specializes in biological and food chemistry, and is the author of a number of technical papers. He is chief of the Purchase Laboratory of the Massachusetts Commission on Administration and Finance, Boston, Mass.

FULTON B. FLICK, F.A.I.C., was educated at Iowa State College, from which he received the B.S., M.S., Ch.E., and LL.B. degrees. He specializes in the metallography of aluminum and its light alloys; soldering aluminum; and chemical and metallurgical patent cases. He is a partner in Brown, Critchlow and Flick, Attorneys at Law, Pittsburgh, Penna.

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SIDNEY J. FRENCH, F.A.I.C., studied at the University of Chicago and at the University of Wisconsin. From the latter university he received the Ph.D. degree. He is interested in the fields of general and physical chemistry, electrochemistry, inorganic chemistry, mineralogical and geological chemistry, metallurgy and metallography rare and precious metals, and teaching of chemistry. He is the author of twenty-five or more publications, including one book. His position is professor at Colgate University, Hamilton, N. Y.

HENRY B. FRONING, F.A.I.C., obtained the A.M. degree from St. Joseph's College. He has also studied at Ohio State University, Catholic University of America, and Johns Hopkins University. He specializes in organic chemistry, foods, the fermentation industries, paints, varnishes and resins, and the teaching of chemistry. He is head of the Department of Chemistry and of the Department of Chemical Engineering at the University of Notre Dame, Notre Dame, Indiana.

WILLIAM C. GEER, F.A.I.C., received the Ph.D. degree from Cornell University. He specializes in rubber and allied substances on which he has done special research since 1925. He is an independent research and consulting chemist at 624 Highland Road, Ithaca, N. Y.

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BERNARD GINSBERG, F.A.I.C., was graduated from the University of Chicago with the Ph.D. degree. He specializes in surface tension; interfacial tension; polymolecular films; adsorption; general refining of lubricating oils, and holds the position of research chemist with the Standard Oil Company, Whiting, Indiana.

ARTHUR B. GOULD, F.A.I.C., studied at West Virginia Wesleyan College, and then at Cornell University from which he received the Ph.D. degree. He is most interested in the field of chemistry in education. His position is professor of chemistry, Salem College, Salem, W. Va.

LOTTI J. GREIFF, F.A.I.C., has the B.A. degree from Barnard College, the M.S. degree from Cornell, and the Ph.D. degree from Columbia. She specializes in general and physical chemistry, analytical chemistry, inorganic chemistry, rubber and allied substances, and the teaching of chemistry. She is the author of several publications, and is employed by the City of New York as a teacher of chemistry in Wadleigh High School.

STUART W. GRIFFIN, F.A.I.C., studied at the U. S. Naval Academy Preparatory School, Albion College, the University of Michigan, and the University of Arizona, receiving the M.S. degree from the latter university. His preferred chemical subjects are analytical chemistry, organic chemistry, general industrial chemistry, soils, fertilizers and agricultural poisons, water, sewage and sanitation. He is the author of a number of confidential reports and papers for the U. S. War Department. His position is chemist with the U. S. Bureau of Chemistry and Soils, Washington, D. C.

CHARLES E. GROSS, F.A.I.C., was graduated from Ohio State University and received the Ph.D. degree from Northwestern University. He specializes in organic chemistry; bacteriology, and physics; packing-house chemistry, and nutritional chemistry. He is co-author of several publications. He is employed as director of research by John Morrell and Company, Ottumwa, Ohio.

HERBERT H. GUEST, F.A.I.C., received the Ph.D. degree from Yale University. He specializes in organic chemistry, fatty acids, acetylenic compounds, synthetic perfumes, and soaps, and is the author or co-author of fifteen technical papers. His position is chief chemist for the J. B. Williams Company, Glastonbury, Conn.

INGO W. D. HACKH, F.A.I.C., was educated at the Technische Hochschule, Stuttgart, and at the University of California from which he received the A.M. degree. Specializing in nomenclature and terminology, he is the author of "Chemical Dictionary", "Chemical Reactions and Equations", and "Structure Symbols of Organic Compounds", all published by P. Blakiston's Son, Inc. He is professor of chemistry, College of Physicians and Surgeons, San Francisco, Calif.

EDWARD C. HAINES, F.A.I.C., holds two degrees from Haverford College

and the Ph.D. degree from Massachusetts Institute of Technology. Experienced in the varnish industry, he is employed as chemist by the George D. Wetherill Varnish Company, Camden, N. J.

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HENRY WINSTON HARPER, F.A.I.C., has the M.D. degree from the University of Virginia, and the LL.D. degree from Baylor University. He specializes in pharmacology, geology, and pathology. His position is dean of the Graduate School of the University of Texas, Austin, Texas.

ROBERT B. HARPER, F.A.I.C., holds the degrees of B.S. and Chemical Engineer from Armour Institute of Technology. He is author of more than fifty papers on scientific, engineering, educational, or economic subjects. Specializing in fuels, gas, tar, and coke, he has been employed by the Peoples Gas Light and Coke Company (Chicago, Illinois) for thirty-one years. He is now vice-president in charge of research and testing for that company.

WALTER H. HARTUNG, F.A.I.C., was graduated from the University of Minnesota, and received the Ph.D. degree from the University of Wisconsin. He specializes in the chemical structure of therapeutically active compounds, their synthesis, and the effect of structure on physiological activity. He is author of about twenty-five technical papers and holder of various patents. His title is professor of pharmaceutical chemistry, at the School of Pharmacy, University of Maryland, Baltimore, Md.

EDWARD O. HEUSE, F.A.I.C., studied at Hanover College, Cornell University and the University of Illinois, from which he obtained his Ph.D. degree. Specializing in physical chemistry, inorganic chemistry, and physics, he is head of the Chemistry Department of Southern Methodist University, Dallas, Texas.

L. B. HITCHCOCK, F.A.I.C., was educated at the Massachusetts Institute of Technology from which he received the Sc.D. degree. Specializing in general industrial chemistry, acids, alkalies, salts, and sundries, he has been a contributor to the technical literature on the subjects of vapor pressures of hydrocarbons; development, economic status, and technology of various Southern chemical industries, including the pulp and paper industries in Virginia. He is a consulting chemical

engineer with the Hooker Electrochemical Company, Niagara Falls, N. Y.

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GEOFFREY M. JAMES, F.A.I.C., was graduated from Cornell University and obtained the Ph.D. degree from the University of Pennsylvania. Particularly interested in general and physical chemistry, electrochemistry, inorganic chemistry, metallurgy and metallography, general industrial chemistry, foods, water, and fuels, he is the author of several publications. He is technical director of the Dry Ice Corporation of India, Ltd. His temporary address is 2333 N. 22nd Street, Philadelphia, Penna.

J. H. JENSEN, F.A.I.C., received the M.S. degree from the University of Michigan, and has also studied at the University of Minnesota and Columbia University. Particularly interested in the teaching of chemistry and the classroom equipment essential to the teaching of sciences, he is head of the Division of Science of Northern Normal and Industrial School, Aberdeen, S. D.

NEWS

Dr. John Howard Northrop of the Rockefeller Institute for Medical Research will receive the Charles Frederick Chandler Medal of Columbia University for 1936, announced Dr. Nicholas Murray Butler, president of the university, following action by the board of trustees. Dr. Northrop, who will deliver the annual Chandler lecture next Spring, was cited for fundamental discoveries concerning bacteria, the constitution of the protein and the chemistry of digestion. The medal, for outstanding distinction in chemical science, was founded in 1910 to honor Professor Chandler, who for more than half a century pioneered in industrial chemistry and taught chemistry at Columbia.

Harry L. Lourie, F.A.I.C., was decorated December 17, 1936, as a French *Chevalier* by M. Garreau-Dombasie, French Commercial Attaché, in New York, N. Y.

Two awards of the American Institute of the City of New York for 1937, a Gold Medal to the Bell Telephone Laboratories, and a Fellowship to Watson Davis, director of *Science Service*, were announced by Gerald Wendt, F.A.I.C., director of the Institute. The awards will be presented at a meeting to be held February 4, 1937.

The gold medal, given annually by the American Institute in recognition of outstanding accomplishments in research, was awarded to the Bell Telephone Laboratories "for researches in electrical science which, applied to comunication, have promoted understanding, security and commerce among peoples by transmitting human thought instantly throughout the world," the announcement stated.

The Fellowship in the Institute, conferred for outstanding service in the interpretation of science to laymen, was awarded to Mr. Davis "for interpreting to the people of the Nation the rapid progress of science upon which modern civilization depends and for the organized dissemination of research findings as news."

Howard S. Neiman, F.A.I.C., spoke, December seventh, before the technical staff of Harrison Oil Products Company, Harrison, N. J., on the subject of "The Relation Between the Research Chemist and the Patent Attorney."

On Thursday, December third, Professor Alexander Silverman, F.A.I.C., head of the Department of Chemistry in the University of Pittsburgh, delivered the Founders' Day address on the one hundred and first anniversary of the granting of the charter of Alfred University, Alfred, New York. He spoke on "A Better World Through Science." Following the address, President J. Nelson Norwood conferred the honorary degree of Doctor of Science on Dr. Silverman.

Leonard C. Cartwright, A.M. (Harvard), has recently joined the staff of Foster D. Snell, Inc., Brooklyn, N. Y. Mr. Cartwright has had extensive experience in the industry as research, development, and consulting chemist and engineer.

The Perkin Medal for 1937 was presented January eighth to Thomas Midgley, Jr., of the Ethyl Gasoline Corporation, at a joint meeting of the American Section of the Society of Chemical Industry and the AMERICAN CHEMICAL SOCIETY, held at The Chemists' Club, New York, N. Y. James G. Vail, F.A.I.C., chairman, presided over the meeting. The program included a talk by Robert E. Wilson on the accomplishments of the medalist, presentation of the medal by Marston T. Bogert, F.A.I.C., and delivery of the medal address by Thomas Midgley, Jr. His paper was entitled, "From the Periodic Table to Production."

Dr. W. F. G. Swann, director of the Bartol Research Foundation, Swarthmore, Pennsylvania, spoke on "The Nature of Cosmic Ray Phenomena", before the New York University Chapter of Sigma Xi, held December eleventh.

The editor of THE CHEMIST spoke recently from the Speaker's Forum of Station WQXR on the subject, "Modern Living Through Chemistry".

FROM OUR READERS

Editor THE CHEMIST:

On page 772 of your December issue there occurs a statement as follows: "You know the kind of detective work done by chemists in the year 1917, when they analyzed the liquid 'gas' in unexploded German gas shells and deduced a method of manufacture by study of the impurities in the liquid. They told the Allies how to increase enormously the production of the poison gas by adopting the efficient and rapid German procedure for making the gas instead of the inefficient and slow procedure previously devised by other chemists of the Allies". This indicates that the Allies' chemists were trailers after the Germans, whereas the facts were exactly the other way round.

The "liquid gas" referred to is evidently *dichlorosulfide*, commonly called "mustard gas", and a general survey of the main facts in the matter will be found in Chapter IX of *Chemical Warfare* by Fries and West (McGraw-Hill, 1921), which reprints part of Prof. Norris' paper from *Industrial and Engineering Chemistry*, 1919, **11**, 821, giving details as to the German process, which was a slow method, via chlorhydrin. I am informed that the German production was never much over fifty tons per week, whereas, at the time of the Armistice, our potential production was two hundred and fifty tons per day. The method which made this huge production possible is a direct reaction between ethylene and sulfur chloride. It had been worked out in England by Sir William Pope, Gibson, Levinstein, and others, but the same process had been very nearly completed here by F. W. Zinsser and W. P. Cohoe when the news came from England.

Considerable colloidal sulfur was allowed to remain in the Allied mustard, and the Germans found this on analyzing some Allied "duds", a fact which readily led them to the vastly superior Allied method. I am informed that at the time of the Armistice, the Germans were building, or had built a plant to operate according to the English-American process. It would appear that in this case, therefore, the Germans were the "copy-cats", not the Allies.

Sincerely,
Jerome Alexander, F.A.I.C.

Editor's Comment: Mr. Edward Thomas, author of the article, "You Can't Keep a Chemical Secret," in which the statement referred to above occurs, has read this letter and says that the source of information upon which he relied was apparently erroneous. We shall welcome any further contributions to this discussion.

To the Secretary:

After reviewing the December number of THE CHEMIST, I must admit to a former erroneous impression in regard to the aims and purposes of THE AMERICAN INSTITUTE OF CHEMISTS. A copy of the membership prospectus together with application blank would be appreciated.

—From a Director of Research

To the Editor:

I thought the December issue very good and particularly enjoyed the article by Dr. Elworthy on "The Profession of Chemistry in the Dominion of Canada."

—From a Fellow Member.

CHEMISTS ABROAD

By James N. Taylor, F.A.I.C.

LO, THE POOR CHEMIST! Who is he? What is he? Should he be tagged and labeled? Who speaks for him? We may know the answers to all these questions before we have done! In the meantime our illustrious contemporary INDICATOR writing in the *Oil and Colour Trades Journal*, (*London*) quotes Chemistry Professor T. P. Hilditch of Liverpool University as asking

"SHOULD CHEMISTS be labelled?" asked Professor Hilditch. "Labels to the chemist, and apparently also to the employer, are useful things to have about," he added. "If we label the contents of one bottle 'H_2SO_4 dilute' and of another 'H_2SO_4 conc.,' why not discriminate between the man who has learned chemical knowledge and the man who has learned further something of how to use that knowledge?"

Maybe, though, if anyone tried to label chemists they might get something on the conc.

"WHO SPEAKS for Chemists?" is a question propounded by Dr. L. A. Jordan at a joint meeting of Chemical Societies in the Royal Technical College, Glasgow. "What does the man-in-the-street know of chemistry and chemists? My children" said he, "complain to me of having to explain to their small friends that they do not live at a drug store, and that they have quite despaired of explaining how I earn my living. They have said to me: 'Why aren't you something that people can understand?' In no other country in the world is there any confusion between chemists and pharmacists . . . a pharmacist is a pharmacist because he is vetted and qualified by the Pharmaceutical Society, which can and does speak for all pharmacists. People and Parliament can understand that.

"But who speaks for chemists? . . We are beaten on organization, and our professional epitaph might well read, 'Here lies chemistry—he died of a surfeit of adjectives!'" On the other hand

"THE CHEMICAL Profession is not recognized partly due to the fact that the chemical profession is not yet unified to the same extent as medicine, law and engineering," stated Prof. J. C. Philip, O.B.E., B.Sc. F.R.S., at the Blackpool meeting of the British Association for the Advancement of Science. "It is really time," he said, "that the British public and its leaders recognized the validity and the implications of the term 'Chemical Profession'. A profession is a vocation demanding high educational and technical qualifications, and it connotes also the body of those who by virtue of their qualifications are able to serve the needs and welfare of society in some particular field. On all these counts chemistry should have a place beside medicine, law, and engineering." As opposed to this thesis

"THERE is no longer much use comparing the practice of chemistry with either law or medicine," comments an editorial in *Canadian Chemistry and Metallurgy* (*Toronto*) for October, 1936, apropos the address of Professor Philip at the Blackpool meeting. "Chemists would

be foolish to accept legal limitations of any kind in the performance of their work. If they wished to use their united power on a labor union basis, they probably could increase their scale of pay, particularly in the junior ranks.

"But chemistry is not readily put on a material production basis and there are very narrow limits to the application of union monetary principles. Chemists in part may well look upon their training as an avenue of development toward management and leadership service to industry and the public. By such means only," continues the editorial "can quite legitimate ambitions be served by those who will never be satisfied with less."

THE PROFESSIONAL Group for Analytical Chemistry of the German Chemical Society will bear in the future the name "Professional Group for Analytical Chemistry and Microchemistry." The establishment of a new *Deutschen Gesellschaft für Mikrochemie* has been refused by the German Chemical Alliance and the Society.—*Chemiker-Zeitung (Köthen).*

MR. L. E. Westman, F.C.I.C., retiring president of the Canadian Chemical Association, addressing a symposium sponsored by the Canadian Institute of Chemistry, said that science and its applications should not be the whole end for the professional man of ambition. . . . The average chemist is too fearful of ordinary business matters and too prone to say, "I don't know." He should not hesitate to take an opportunity to become capitalized in a small or large way, and should learn how to manage, and how to sell, and something of economics. Too many mature chemists, still in the laboratory, feel that they have made a mistake in their choice of career. They should be less diffident about their business ability and offer opinions on things other than their own work.—*Canadian Chemistry and Metallurgy (Toronto).*

THE CHEMIST as Citizen was the keynote of an address by Mr. R. Brightman, M.Sc., F.I.C., before the British Association of Chemists in Accrington recently. Mr. Brightman, according to the *Chemical Trade Journal (London)*, said there was a tendency for associations to become static and mentally non-receptive. He appealed to chemists to carry their knowledge of scientific method into everyday life and not to leave it in the laboratory. They failed lamentably in the larger sphere to display the same standards of exactitude and judgment as they applied in their immediate occupation. If they would but see and use their opportunities, they might make an amazing contribution to industrial as well as social leadership.

A UNIVERSITY professor of chemistry in the United States is reported recently to have offered to eat his shirt if an assertion he made was wrong, and to have done so when he was proved in error. To perform this troublesome feat he first dissolved the shirt in acid, then neutralized the acid with another chemical, and proceeded to filter out all poisonous ingredients with a specially designed apparatus. Finally, his last operation was to spread the resultant pulp on a piece of bread and make a meal of it.—*The Manchester Guardian Commercial, (England).*

In Balneo Arenae

The following curious epitaph is said to have been written in the "Merchants' Coffee House" in Essex Street, Dublin, about the year 1753, by Boyle Godfrey, a well-known chemist in those days, a short time before his death:

EPITAPHIUM CHYMICUM.

"Here lieth to digest, macerate, and amalgamate with Clay,
Stratum, super Stratum,
The Residuum, Terra Damnata,
et Caput Mortuum
Of BOYLE GODFREY, Chymist, and M.D.
A Man, who, in this earthly Laboratory,
Pursued various Processes to obtain
Arcanum Vitae,
Or, the Secret to live;
Also, Aurum Vitae,
Or, the Art of getting, rather than making, Gold.
Alchymist-like,
All his Labour and Projection,
As Mercury in the Fire, evaporated in Fume.
When he dissolved to his first Principle,
He departed as poor
As the last Drops of an Alembic;
For Riches are not poured
On the Adepts of this World.
Though fond of News, he carefully avoided
The Fermentation, Evervescence
And Descripitation of this Life.
Full seventy Years his exalted Essence
Was hermetically sealed in its
Terene Matrass,
But the Radical Moisture being exhausted,
The Elixer Vitae spent
And exsiccated to a Cuticle;
He could not suspend longer in his Vehicle,
But precipitated Gradatim,
Per Carpanam,
To his Original Dust.
May that Light, brighter than Bolognian Phosphorus, preserve him from the Athanor,
Empyreuma, and reverberatory Furnace of the other World:
Depurate him from the Faeces and Scoria of this,
Highly rectify and volatilize
His aetherial Spirit,
Bring it over the Helm of the Retort of this Globe,
Place it in a proper Recipient
Or Chrystaline Orb,
Among the Elect of the Flowers of Benjamin;
Never to be saturated
'Till the general Resuscitation,
Deflagration, Calcination,
And Sublimation of all Things."

—Dublin Journal of Medical Science.

"The vacuum of the thermometers in instruments which are intended for high pressures is, as you are aware, filled with nitrogen."—*H. A. Bernthsen, Proceedings, Eighth International Congress of Applied Chemistry, Volume 28, page 182.*

Sciencia Docet.

Mr. Frank Kelly is superintendent and general manager of a locomotive firebox on the Baltimore & Ohio Railroad. In short, he is a locomotive fireman, and appeared before the Arbitration Board that has lately been in session. Mr. Kelly held that the use of automatic stoking apparatus is a wasteful process. He was good enough to explain the processes of combustion as they take place under a locomotive boiler with such originality that we take pleasure in reprinting a portion of his address as reported in the *New York Times*.

"The chemical reactions, you understand," he said, "that take place in a firebox are entirely different on a stoker engine than what they are on a hand-shoveled engine. Science tells us that 75 per cent. of the air we breathe is oxygen, while a very small portion of it is hydrogen. Oxygen itself is an aid to combustion only, while hydrogen will burn with an intense heat. The presence of the hydrogen gas burning can be noted by extremely white, bright flames in the firebox.

"Now, then, I have found this to be my actual experience, that while on the line of road, after we get a little fire built up with a shovel and wet our coal, and when we have got the engine to working, the temperature of the firebox is something over 110 degrees Fahrenheit. That is naturally pressure enough to separate the oxygen from the hydrogen, and consequently by wetting the coal we get what is known as H-2-O, two atoms of hydrogen and one atom of oxygen in the make-up of a molecule of water, and by freely distributing the water over the coal, we get the hydrogen that is necessary to burn, and we also get a little more in addition to the elements that are taken out of the atmosphere to add to our oxygen, and it will be much more aid to the combustion of any foreign or volatile substance that might arise in the coal, consequently we do not have the amount of clinkers to put up with, we are getting a freer draft through the grates and on the other hand we do not have to be inhaling dust from one end of the division to the other.

"I was only looking for an opportunity of this sort, Mr. Chairman, where I could get up and put myself in evidence that if the stoker people or the stoker inventors would question our rights in regard to a man's amount of wages for a man's amount of work, I would place myself in evidence as going to the Grand Lodge and getting them to co-operate with the various anti-tuberculosis societies of the different States, if the stoker was allowed to remain in vogue, and have them abolished."

"Take some hydrogen from water and some carbon from coal, wood, or anything else, heat, freeze, shake or stir and you will have gasoline."

—*Editor, National Petroleum News*

Berlin Sweet Shoppes are offering a chocolate-bar made of coal-tar. It improves on the French War-time article, which used a gravel base. — *Detroit News.*

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A substance side-steps to the place
Where it would like to go.

—*Ellwood Hendrick.*

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